

What is claimed is:

- [c1] 1. A motor/generator power conditioner, comprising:
a rectifier electrically coupled to a motor/generator port; and
an inverter electrically coupled to the rectifier and to a load port,
wherein in a startup mode, the combined rectifier and inverter provides startup power to the motor/generator port, and
wherein in an operational mode, the combined rectifier and inverter provides generated power to the load port and generates a neutral output.
- [c2] 2. The motor/generator power conditioner of claim 1, further comprising:
a DC power bus capable of bi-directional power flow electrically coupling the rectifier to the inverter; and
a bus capacitor positioned in parallel to the DC power bus.
- [c3] 3. The motor/generator power conditioner of claim 2, further comprising a startup power source is coupled to the DC power bus,
4. The motor/generator power conditioner of claim 3, wherein in the operational mode the startup power source is recharged by at least one of the rectifier and the inverter.
- [c4] 5. The motor/generator power conditioner of claim 1, wherein the rectifier comprises an active rectifier.
- [c5] 6. The motor/generator power conditioner of claim 5, wherein the rectifier comprises a three-leg rectifier comprised of:
a plurality of switching devices; and
a plurality of diodes, each of said diodes being electrically coupled in parallel to a respective corresponding switching device.
- [c6] 7. The motor/generator power conditioner of claim 1, wherein the inverter comprises a four-leg inverter comprised of:
a plurality of switching devices; and
a plurality of diodes, each of said diodes being electrically coupled in parallel to a respective corresponding switching device,
wherein one of the four legs is electrically coupled to the neutral output.

- [c7] 8.The motor/generator power conditioner of claim 1, wherein the combined rectifier and inverter provides sufficient generated power and sufficient startup power without a separate starter circuit.
- [c8] 9.The motor/generator power conditioner of claim 1, further comprising a separate starter circuit for producing the startup power.
- [c9] 10.The motor/generator power conditioner of claim 1, wherein a power factor of the generated power is adjustable.
- [c10] 11.The motor/generator power conditioner of claim 1, wherein a power factor of the generated power is greater than about 0.95 leading or lagging.
- [c11] 12.The motor/generator power conditioner of claim 1, wherein a power factor of the generated power is about zero.
- [c12] 13.The motor/generator power conditioner of claim 1, further comprising a prime mover for the motor/generator.
- [c13] 14.The motor/generator power conditioner of claim 13, wherein the prime mover for the motor/generator comprises one of a turbine and a diesel motor.
- [c14] 15.The motor/generator power conditioner of claim 1, wherein the motor/generator power conditioner is a two stage conditioner.
- [c15] 16.A method of controlling a motor/generator, comprising:
supplying startup power to the motor/generator via a rectifier electrically coupled to an inverter;
conditioning generated power from the motor/generator via the rectifier and the inverter; and
generating a neutral output via the combined rectifier and inverter while conditioning generated power.
- [c16] 17.The method of claim 16,
wherein supplying startup power to the motor/generator comprises supplying sufficient power to the motor/generator absent a separate starter circuit, and
wherein conditioning generated power from the motor/generator comprises

conditioning sufficient power from the motor/generator absent a separate starter circuit.

- [c17] 18.The method of claim 16, further comprising:
adjusting a power factor of the generated power.
- [c18] 19.The method of claim 16, wherein the power factor of the generated power is greater than about 0.95 leading or lagging.
- [c19] 20.A motor/generator power conditioner, comprising:
means for supplying startup power to the motor/generator;
means for conditioning generated power from the motor/generator; and
means for generating a neutral output from the means for conditioning generated power.
- [c20] 21.A motor/generator power conditioner, comprising:
a three-leg active rectifier electrically coupled to a motor/generator port;
a four-leg inverter electrically coupled to a load port;
a bi-directional DC power bus electrically coupling the rectifier to the inverter;
and
a neutral output coupled to one of the legs of the inverter.
- [c21] 22.The motor/generator power conditioner of claim 21,
wherein in a startup mode, the combined rectifier and inverter provides startup power to the motor/generator port, and
wherein in an operational mode, the combined rectifier and inverter provides generated power to the load port and a neutral for the neutral output.
- [c22] 23.The motor/generator power conditioner of claim 22 wherein a power factor of the generated power is adjustable.
- [c23] 24The motor/generator power conditioner of claim 22 wherein a power factor of the generated power is greater than about 0.95 leading or lagging.